U.S. Department of the Interior
Bureau of Land Management
Little Snake Field Office
455 Emerson Street
Craig, CO 81625-1129

ENVIRONMENTAL ASSESSMENT

EA-NUMBER: DOI-BLM-CO-N010-2011-0080-EA

CASEFILE/PROJECT NUMBER/LEASE NUMBER:

COC64882: K-Diamond Federal Well # 21-21
COC074942: Access Road Right-of-Way

PROJECT NAME: K-Diamond Federal Well #21-21 and Access Road Right-of-Way

LEGAL DESCRIPTION: COC64882, NENW, Sec. 21, T. 6 N., R. 92 W., Moffat County, 6th PM.
COC74942, W½W½, SE¼SW¼, sec. 16, T. 6 N., R.92 W., Moffat County, 6th PM.

APPLICANT: Quicksilver Resources

PLAN CONFORMANCE REVIEW: The proposed action is subject to the following plan:

Name of Plans: Little Snake Resource Management Plan and Record of Decision (ROD) approved on April 26, 1989; and the Colorado Oil and Gas Leasing & Development Environmental Impact Statement (EIS) and the ROD signed on November 5, 1991.

Language: The proposed well would be located within Management Unit 1 (Little Snake Resource Management Plan). The objectives of Management Unit 1 are to realize the potential for development of coal, oil, and gas resources.

The proposed action was reviewed for conformance with this plan (43 CFR 1610.5, BLM 1617.3). The proposed action is in conformance with the objectives for this management unit.

NEED FOR PROPOSED ACTION: To allow development of federal natural gas resources to meet the public's continuing economic demands for a dependable and affordable supply of oil, while giving due consideration to the protection of other resource values; and facilitate the leaseholder's rights to develop oil and gas resources within their federal mineral leases in accordance with the Mineral Leasing Act of 1920, as amended.

The requested Federal Action is needed to allow development of minerals within an existing federal unit, according to the principles of multiple use, while maintaining the rights and obligations of other users and protecting resources in the project area.

PUBLIC SCOPING PROCESS: The action in this EA is included in the NEPA log posted on the LSFO web site: http://www.blm.gov/co/st/en/BLM_Information/nepa/lsfo.html.
The Notice of Staking (NOS) has been posted in the public room of the Little Snake Field Office for a 30-day public review period beginning April 27, 2011 when the NOS was received, and may be viewed during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except holidays.

No comments were received.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES: The proposed action would be to approve one Application for Permit to Drill (APD) submitted by Quicksilver Resources. The operator proposes to drill one oil well on private land over Federal minerals located in the NENW, Sec. 21, T. 6 N., R. 92 W 6th P.M. An APD has been filed with the LSFO for the K-Diamond Federal Well #21-21. The APD includes drilling and surface use plans that cover mitigation of impacts to vegetation, soil, surface water, and other resources. Mitigation not incorporated by Quicksilver Resources in the drilling and surface use plan would be attached by the BLM as Conditions of Approval to an approved APD.

The proposed well would be located approximately 10.6 miles west from the town of Craig, CO off of Moffat County Road 174. Construction work would be planned to start during the summer of 2011 and the estimated duration of construction and drilling for the well would be 30 days. 15,823 feet of new access road would be constructed, resulting in 11.0 acres of disturbance. Not all access road would be on lease. 533 feet would be on lease, 8,029 feet would be off lease on public land, and 7,261 feet would be on private surface off-lease. The APD includes an application for road right-of-way (ROW) COC074942 for access across off-lease public land. The road would have a maximum width of disturbance of 30 feet resulting in an 18 foot running surface. Road construction would result in 0.5 acre of disturbance on lease and 5.6 acres of disturbance off-lease on public land.

The proposed well pad would be cleared of all vegetation and leveled for drilling. Topsoil and native vegetation would be stockpiled for use in reclamation. Approximately 1.6 acres would be disturbed for construction of the well pad. This would include the 300' by 200' well pad, the topsoil, and subsoil piles. A closed loop system would be utilized and no reserve pit would be authorized. Drill cuttings would be hauled to an approved disposal facility when dry. If the well is a producer, cut portions of the well site would be backfilled and unused portions of the well site would be stabilized and re-vegetated; interim reclamation would reclaim approximately 0.8 acre of disturbance. If the oil well proves unproductive, it would be properly plugged and the entire well pad and access road would be reclaimed.

Quicksilver Resources did not include plans for any pipelines with the APD.

The total surface disturbance for the proposed action would be 12.6 acres.

NO ACTION ALTERNATIVE

The No Action alternative would be to deny the Application for Permit to Drill and therefore the well would not be drilled, and the pad, access road, and facilities would not be constructed.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES/MITIGATION MEASURES

For the following resources and issues, those brought forward for analysis will be addressed below.

Resource/Issue	N/A or Not Present	Applicable or Present, No Impact	Applicable & Present and Brought Forward for Analysis
Air Quality			SW 06/01/11
Areas of Critical Environmental Concern	KSD 06/01/11		
Environmental Justice/ Socio-Economics			LM 06/06/11
Cultural Resources			EM 06/16/11
Flood Plains	ELS 05/23/11		
Fluid Minerals			EMO 06/08/11
Forest Management	SW 06/01/11		
Hydrology/Ground			EMO 06/08/11
Hydrology/Surface			ELS 05/23/11
Invasive/Non-Native Species			SW 06/01/11
Native American Religious Concerns			EM 06/16/11
Migratory Birds			DA 06/10/11
Paleontology			EMO 06/08/11
Prime and Unique Farmland	ELS 05/23/11		
Range Management			CR 06/14/11
Realty Authorizations			LM 06/06/11
Recreation/Transportation	KSD 06/01/11		
Soils	SW 06/01/11		
Solid Minerals	JAM 06/01/11		
T&E and Sensitive Animals			DA 06/10/11
T&E and Sensitive Plants			JHS 06/06/11
Upland Vegetation			CR 06/14/11
Visual Resources	KSD 06/01/11		
Water Quality - Surface			ELS 05/23/11
Wetlands/Riparian Zones	ELS 05/23/11		

Wild and Scenic Rivers	KSD 06/01/11		
Wild Horse & Burro Mgmt	SW 06/01/11		
Wilderness Characteristics/WSA's	KSD 06/01/11		
Wildlife - Aquatic	DA 06/10/11		
Wildlife - Terrestrial			DA 06/10/11

AIR QUALITY

Affected Environment: There are five federal Class I areas within 100 kilometers of the Little Snake Resource Management Area (LSRMA) boundary, all of which occur in Colorado. There are no federal Class I areas in Utah or Wyoming within 100 km of the LSRMA boundary. There are no non-attainment areas nearby that would be affected by the proposed action.

Proposed Action

Environmental Consequences: Short term, local impacts to air quality from dust would result during and after well pad construction. Drilling operations produce air emissions such as exhaust from diesel engines that power drilling equipment. Air pollutants could include nitrogen oxides, particulates, ozone, volatile organic compounds, fugitive natural gas, and carbon monoxide. Gas flaring reduces the health and safety risks in the vicinity of the well by burning combustible and poisonous gases like methane and hydrogen sulfide.

At a regional scale, atmospheric dust, caused by destabilization of soil as a result of land use changes coupled with drought conditions, is receiving increased attention for its ability to alter alpine environments. Dust covered snow melts faster because it can absorb more solar energy, which affects snowpack conditions and can result in earlier and faster spring runoff events. The Colorado Plateau has been identified as a primary dust source for several recent alpine dust events on the Western Slope of Colorado. Areas of low annual precipitation, little to no vegetation cover, and an available supply of sediment are of primary concern for mitigation of expanding or new sources of dust.

Mitigation Measures: Retaining as much vegetative cover as possible during the project and/or reclaiming and covering disturbed areas shortly following excavation should help keep localized dust down during dry periods.

No Action Alternative
Under the No Action alternative, because no new disturbance, drilling rigs, or truck traffic is anticipated, no impacts to air quality would occur.

CULTURAL RESOURCES

Affected Environment: Cultural resources, in this region of Colorado, range from late Paleo-Indian to Historic. For a general understanding of the cultural resources in this area of Colorado, see *An Overview of Prehistoric Cultural Resources, Little Snake Resource Area, Northwestern*

Colorado, Bureau of Land Management Colorado, Cultural Resources Series, Number 20, *An Isolated Empire, A History of Northwestern Colorado*, Bureau of Land Management Colorado, Cultural Resource Series, Number 2 and *Colorado Prehistory: A Context for the Northern Colorado River Basin*, Colorado Council of Professional Archaeologists.

Proposed Action
Environmental Consequences: The approval of the APD and creation of an access road is considered an undertaking under Section 106 of the National Historic Preservation Act. The proposed undertaking has undergone a Class III cultural resource survey:

Conner, Carl E and Barbara Davenport
2011 Class III Cultural Resource Inventory Report for the Proposed K-Diamond 21-21 Well Location and Access in Moffat County, Colorado. GRI 2011-42. BLM-LSFO #11.3.2011. Grand River Institute. Grand Junction Colorado.

These studies did not identify any archaeological or historical sites eligible for the National Register. The proposed undertaking will have no effect on historic properties. It may proceed as described with the following standard mitigative measures in place.

Mitigative Measures:

1. Any cultural and/or paleontological (fossil) resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and the authorized officer will make any decision as to proper mitigation measures after consulting with the holder.

2. The operator is responsible for informing all persons who are associated with the operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are encountered or uncovered during any project activities, the operator is to immediately stop activities in the immediate vicinity of the find and immediately contact the authorized officer (AO) at (970) 826-5000. Within five working days, the AO will inform the operator as to:

    - Whether the materials appear eligible for the National Register of Historic Places;
    - The mitigation measures the operator will likely have to undertake before the identified area can be used for project activities again; and
    - Pursuant to 43 CFR 10.4(g) (Federal Register Notice, Monday, December 4, 1995, Vol. 60, No. 232) the holder of this authorization must notify the AO, by

telephone at (970) 826-5000, and with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.

3. If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

No Action Alternative
Under the No Action alternative, because no disturbance is anticipated, no impacts to cultural resources would occur.

FLUID MINERALS

Affected Environment: The proposed well would be in the favorability zone 4 (highest for oil and gas potential). These wells would penetrate the Mesa Verde, Mancos and Niobrara formations.

Proposed Action
Environmental Consequences: The casing and cementing program would be adequate to protect all of the resources identified above. All coal seams and fresh water zones would also be protected. The BOP system would be adequately sized. All of these zones would be cased off.

Mitigative Measures: None.

No Action Alternative
Under the No Action alternative, there would be no development of fluid minerals and no effects on existing fluid mineral reservoirs.

INVASIVE/NON-NATIVE SPEICES

Affected Environment: Invasive and noxious weeds are present in the area. Invasive annuals such as downy brome (cheatgrass), halogeton, blue mustard and yellow alyssum are common, occupying disturbed areas. Invasive annual weeds are typically established on disturbed and high traffic areas whereas biennial and perennial noxious weeds are less common in occurrence. Downy brome and halogeton are on the Colorado List C of noxious weeds and efforts to control halogeton are intensifying in this area. Colorado List B noxious weeds that are present within the surrounding areas include Russian knapweed, hoary cress (whitetop), Canada thistle and biennial thistles. The BLM is in cooperation with the Moffat County Cooperative Weed Management

program to employ the principals of Integrated Pest Management to control noxious weeds on public lands. Additionally, the BLM, Moffat County, livestock operators, pipeline companies and oil and gas operators have formed the Northwest Colorado Weed Partnership to collaborate efforts on controlling weeds and finding the best integrated approaches to achieve results.

Proposed Action
Environmental Consequences: The surface disturbing activities and associated traffic involved with construction of this well, support infrastructure, and subsequent activities would create an environment and provide a mode of transport for invasive species and other noxious weeds to become established. Construction equipment and any other vehicles brought onto the site can introduce weed species. Wind, water, recreation vehicles, livestock and wildlife would also assist with the distribution of weed seed into the newly disturbed areas. The annual invasive weed species (downy brome, yellow alyssum, blue mustard and other annual weeds) occur on adjacent areas and would occupy the disturbed areas. The bare soils and the lack of competition from a perennial plant community would allow these weed species to grow unchecked and could affect the establishment of seeded plant species. Establishment of perennial grasses and other seeded plants are expected to provide the necessary control of invasive annual weeds within 2 or 3 years. Additional seeding treatments of the disturbed areas may be required in subsequent years if initial seeding efforts are not successful.

The perennial and biennial noxious weeds in the area are less frequently established on the uplands but some potential exists for their establishment in draws and swales or areas that would collect additional water. The largest concern in the project area would be for these species to become established and not be detected, providing seed which can be moved onto adjacent rangelands. The operator would be required to control any invasive and/or noxious weeds that become established within the disturbed areas involved with drilling and operating the well.

Mitigative Measures: Mitigation attached as Conditions of Approval to minimize disturbance and obtain successful reclamation of the disturbed areas, as well as weed control utilizing integrated practices, including herbicide applications, would help to control the noxious weed species. All principles of Integrated Pest Management should be employed to control noxious and invasive weeds on public lands.

No Action Alternative
Under the No Action alternative, because no disturbance is anticipated, no additional effects to the spread of invasive weeds would occur.

MIGRATORY BIRDS

Affected Environment: BLM Instruction Memorandum No. 2008-050 provides guidance towards meeting BLM's responsibilities under the Migratory Bird Treaty Act (MBTA) and Executive Order (EO) 13186. The guidance emphasizes management of habitat for species of conservation concern by avoiding or minimizing negative impacts and restoring and enhancing habitat quality. The LSFO provides both foraging and nesting habitat for a variety of migratory

bird species. Several species on the USFWS's Birds of Conservation Concern (BCC) List occupy these habitats within the LSFO.

Native plant communities in the general area are comprised of sagebrush with an understory of grasses and forbs. A variety of migratory birds may utilize this vegetation community within the project area during the nesting period (May through July) or during spring and fall migrations. The project area contains potential nesting and/or foraging habitat for the following USFWS 2008 Birds of Conservation Concern: golden eagle, Brewer's sparrow, sage sparrow, sage thrasher and loggerhead shrike. The closest golden eagle nest is over a mile away from the well however, this species may hunt for prey in the general area.

Proposed Action
Environmental Consequences: The Proposed Action would disturb 12.6 acres of migratory bird habitat. Although this disturbance would be minimal on a landscape level, it would decrease patch size and may degrade habitat on a small scale. Indirectly, habitat effectiveness adjacent to well pads would be reduced as a result of noise and human activity during construction, drilling and completion activities. If drilling activities occur during the nesting season, there could be negative impacts to migratory bird species through nest destruction or increased stress leading to nest abandonment. However, since the proposed well site will only disturb 0.8 acres after interim reclamaintion, these impacts would be minimal. Overall, the Proposed Action is not expected to have a measurable influence on the abundance or distribution of migratory birds at a regional scale.

Mitigative Measures: None.

No Action Alternative
Under the No Action alternative, because no disturbance or loss of vegetation is anticipated, there would be no effects to migratory birds under this alternative.

NATIVE AMERICAN RELIGIOUS CONCERNS

Letters were sent to the Uinta and Ouray Tribal Council, Southern Ute Tribal Council, Ute Mountain Utes Tribal Council, Shoshoni Tribal Historic Preservation Officer, and the Colorado Commission of Indian Affairs in the spring of 2010 discussing upcoming projects the BLM would be working on in FY10 and FY11. Letters were followed up with phone calls. No comments were received (Letters on file at the Little Snake Field Office, Craig, Colorado).

PALEONTOLOGY

Affected Environment: The geologic formation at the surface is the Cretaceous age Lewis Shale Formation (Kls) . This formation is dark gray homogenous marine shale. Thickness is estimated at 1,500-1,900 ft. This unit has been classified a Class II formation for the potential for occurrence of scientifically significant fossils. Scientifically significant fossils are occasionally

found within this formation (Armstrong & Wolney, 1989). The potential for discovery of significant fossils on this location is considered to be moderate.

Proposed Action
Environmental Consequences: If any such fossils are located here, construction activities could damage the fossils and the information that could have been gained from them would be lost. The significance of this impact would depend upon the significance of the fossil. An assessment of the significance is made and a plan to retrieve the fossil or the information from the fossil is developed.

Mitigative Measures: If fossils are discovered during construction or other operations, all activity in the area will cease and the Field Office Manager will be notified immediately. An assessment of significance will be made within an agreed timeframe. Operations will resume only upon written notification by the Authorized Officer.

No Action Alternative
Under the No Action alternative, because no ground disturbance, there would be no effects to paleontological resources.

References:

Armstrong, Harley J. and Wolney, David G., 1989, Paleontological Resources of Northwest Colorado: A Regional Analysis, Museum of Western Colorado, Grand Junction, CO, prepared for Bur. Land Management, Vol. I of V.

Miller, A.E., 1977, Geology of Moffat County, Colorado, Colo. Geol. Surv. Map Series 3, 1:126,720.

RANGE MANAGEMENT

Affected Environment: The proposed action is within the Horse Gulch Sec. 15 Grazing Allotment #04065. Cattle are authorized to graze within the allotment from 4/15 through 10/15 for a total of 1,205 AUMs. Additionally, the proposed access road crosses the embankment of two BLM ponds (#206396 and #206397 Fuhr Gulch Section 15 Ponds).

Proposed Action
Environmental Consequences: The proposed well and associated road construction would decrease utilization in the area during these activities. The presence of livestock may hinder reclamation efforts if animals are not excluded from the site. The two BLM ponds have little capacity and are not a vital component of the grazing within the allotment. Additionally, the cattle guard would maintain the pasture boundary and movement by cattle across the fenceline. There would be very few long term effects to range management resulting from this proposed action.

Mitigative Measures: None.

No Action Alternative

Under the No Action alternative, because no ground disturbance, there would be no effects to range resources.

REALTY AUTHORIZATIONS

Affected Environment: Public land in the proposed project area is encumbered with several rights-of-way. Several federal oil and gas leases exist within the project area.

Quicksilver Resources would be using existing MCRs 174 & 90 and existing two-tracks across private and public land to access the K-Diamond Federal Well # 21-21. A new access road ROW would be granted across public land in Section 16, T6N, R92W.

Proposed Action
Environmental Consequences: An access road ROW would be issued to Quicksilver Resources for an access road approximately 8,029 feet in length and 30 feet in width (5.6 acre disturbance). Upon completion of construction and interim reclamation, the permanent ROW width remains 30 feet. After the well is plugged, the access road will be reclaimed according to the terms and conditions of the APD and stipulations of the ROW grant.

Oil and gas development activities in close proximity to pipelines or power lines could result in utility failure or service interruption. Existing buried facilities could be accidentally damaged during project activities. Impacts would be temporary until any damage is repaired. With implementation of the mitigative measures below, the project should result in no adverse impacts.

Mitigative Measures: Potential damage to existing rights-of-way would be minimized by the following actions:

- Avoid existing rights-of-way during the project.
- Utilize the "One Call" system to locate and stake the centerline and limits of all underground facilities in the area prior to project initiation.
- Provide 48-hour notice to the owner/operator of all facilities prior to performing any work near existing rights-of-way.

No Action Alternative
Under the No Action alternative, because no ground disturbance, there would be no need for a realty authorization.

SOILS

Affected Environment: The proposed well and access road would be located 65% in Forelle loam, 30% within the Kemmerer-Moyerson soil complex, and 5% in various other soils. The Forrelle loam is a deep soil are well drained and found on structural benches. Slopes within this unit average 3 to 12 percent. The soils are formed from residuum derived from loess and

alluvium derived from shale and sandstone. Runoff is moderately low to high and the hazard of wind and water erosion is moderate.

The Kemmerer-Moyerson complex well drained and found on hills. Slopes within this unit average 20 to 40 percent. The soils are formed from residuum derived from residuum derived from shale. Runoff is moderately low to high and the hazard of wind and water erosion is high to severe.

Proposed Action
Environmental Consequences: The construction and operation of the well and access road would affect soils within and immediately adjacent to the proposed area of disturbance. Increased soil erosion from wind and water would occur during construction of the well pads and access roads. Erosion would continue throughout the operational life of the wells. Loss of topsoil, soil compaction, and possible increases in sediment loads to drainages are impacts most likely to occur.

Vegetation and soil would be removed from approximately 12.6 acres of land. Soil productivity would decline due to reduced soil microbial activity, impaired water infiltration, mixing of soil horizons, top soil loss, and introduction of weeds. Soil loss from construction would be greatest shortly after project start and would decrease in time as a result of stabilization through revegetation and reclamation of disturbed areas. Soil erosion would be reduced to an acceptable level with the mitigation described in the Surface Use Plan and Conditions of Approval in the approved APD. This mitigation would reduce the potential to have excessive sediments and salts in runoff water from the well sites.

Mitigative Measures: Mitigative measures would be added as conditions of approval. Additional mitigative measures would be employed to prevent or reduce accelerated erosion if it begins to occur within or on constructed drainage and diversion ditches or surface drainages affected by the road or well pad.

No Action Alternative
Under the No Action alternative, because no ground disturbance, there would be no effects to soils resources.

Reference: Natural Resources Conservation Service 2010.
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

T&E ANIMAL SPECIES

Affected Environment: There are no ESA listed or proposed species that inhabit or derive important benefit from the project area. Critical habitat for the razorback sucker, Colorado pikeminnow, bonytail chub and humpback chub is located downstream of the proposed well site.

The general area provides habitat for greater sage-grouse, a BLM sensitive species and a candidate for ESA listing. There are no active leks within a 2 mile radius of the proposed well site or ROW and the area is not classified as nesting habitat. Sage-grouse potentially utilize the general area during the winter and fall months.

Proposed Action
Environmental Consequences:

Colorado River Fish

In May 2008, BLM prepared a Programmatic Biological Assessment (PBA) that addresses water depleting activities associated with BLM's fluid minerals program in the Colorado River Basin in Colorado. In response to BLM's PBA, the FWS issued a Programmatic Biological Opinion (PBO) (ES/GJ-6-CO-08-F-0006) on December 19, 2008, which determined that BLM water depletions from the Colorado River Basin are not likely to jeopardize the continued existence of the Colorado pike minnow, humpback chub, bonytail, or razorback sucker, and that BLM water depletions are not likely to destroy or adversely modify designated critical habitat.

A Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin was initiated in January 1988. The Recovery Program serves as the reasonable and prudent alternative to avoid jeopardy and provide recovery to the endangered fishes by depletions from the Colorado River Basin. The PBO addresses water depletions associated with fluid minerals development on BLM lands, including water used for well drilling, hydrostatic testing of pipelines, and dust abatement on roads. The PBO includes reasonable and prudent alternatives developed by the FWS which allow BLM to authorize oil and gas wells that result in water depletion while avoiding the likelihood of jeopardy to the endangered fishes and avoiding destruction or adverse modification of their critical habitat. As a reasonable and prudent alternative in the PBO, FWS authorized BLM to solicit a one-time contribution to the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program) in the amount equal to the average annual acre-feet depleted by fluid minerals activities on BLM lands.

This project will be entered into the Little Snake Field Office fluid minerals water depletion log which will be submitted to the Colorado State Office at the end of the Fiscal Year.

Greater Sage-grouse

Impacts to grouse species from oil and gas development are discussed in the Colorado Oil and Gas EIS (1991). Impacts include, but are not limited to, displacement into less suitable habitat, nest abandonment, destruction of nests and loss of habitat. Other impacts, such as habitat fragmentation and the spread of weedy plants can also degrade habitat. Since the proposed well site and ROW are not located in mapped nesting habitat, breeding and nesting activities would not be impacted. The Proposed Action would alter 12.6 acres of grouse habitat. Although this disturbance would be minimal on a landscape level, it would decrease patch size and may degrade habitat on a small scale. Indirectly, habitat effectiveness adjacent to well pad would be

reduced as a result of noise and human activity during construction, drilling and completion activities. Drilling would not be allowed from December 1 to April 30 to prevent impacts to big game species (see Terrestrial Wildlife Section) and this timing limitation would also prevent impacts to any sage-grouse that may be using the general area during this time period.

Mitigative Measures: None.

No Action Alternative
Under the No Action alternative, because no disturbance or loss of vegetation is anticipated, there would be no effects.

T&E AND SENSITIVE PLANTS

Affected Environment: There a no federally listed threatened or endangered or BLM sensitive plant species present within or in the vicinity of the proposed well.

Proposed Action
Environmental Consequences: None.

Mitigation Measures: None.

No Action Alternative
Under the No Action alternative, because no disturbance or loss of vegetation is anticipated, there would be no effects.

UPLAND VEGETATION

Affected Environment: The access road and cattleguard would be constructed within a rolling loam range site. Vegetation present within the area includes western wheatgrass, needleandthread, Indian ricegrass and prairie junegrass. Wyoming big sagebrush and rabbitbrush are the primary shrubs. The vegetation exhibits good density, diversity and vigor.

Proposed Action
Environmental Consequences: There would be no adverse impacts to native vegetation as long as noxious weed mitigation and vegetation mitigation is followed. The surface disturbance cause by the road upgrade may result in an increase in undesirable plant species, such as cheatgrass (*Bromus tectorum*). It would be imperative that all COAs regarding weed control and revegetation are followed to avoid increasing undesirable plant species on and in areas surrounding the proposed project area. As long as weeds are controlled and all disturbed areas are reseeded to prescribed mixes of native plant species, the negative impacts to the native plant communities would be effectively mitigated.

Mitigative Measures: Reclamation seed mixture along access road should include Western wheatgrass and needleandthread at a rate of ~2 lbs/acre each.

No Action Alternative
Under the No Action alternative, because no disturbance or loss of vegetation is anticipated, there would be no effects.

WASTE, HAZARDOUS OR SOLID

Affected Environment: The Resource Conservation and Recovery Act (RCRA) of 1976 established a comprehensive program for managing hazardous wastes from the time they are produced until their disposal. U.S. Environmental Protection Agency (EPA) regulations define solid wastes as any "discarded materials" subject to a number of exclusions. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980 regulates mitigation of the release of hazardous substances (spillage, leaking, dumping, accumulation, etc.) or threat of a release of hazardous substances into the environment. Civil and criminal penalties may be imposed if the hazardous waste is not managed in a safe manner and according to regulations. The Colorado Department of Public Health & Environment (CDPHE) administers hazardous waste regulations for oil and gas activities in Colorado.

Proposed Action
Environmental Consequence: The project would fall under environmental regulations that impact disposal practices and impose responsibility and liability for protection of human health and the environment from harmful waste management practices or discharges. The direct impact would be if a solid waste or hazardous material is discarded and contaminates land surface either by solid, semi-solid, liquid, or contained gaseous material. Hazardous, civil, and criminal penalties may be imposed if the waste is not managed in a safe manner, and according to EPA regulations.

Mitigative Measures: The project would be regulated under the Resource Conservation and Recovery Act (RCRA) Subtitle C regulations, which are extremely stringent, as well as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that provides for the definition of hazardous substance, pollutant, and contaminant. The mitigation would include the stringent regulation of waste containment within the project area.

No Action Alternative
Under the No Action alternative, because no drilling or construction activities would be permitted there would be no effects

WATER QUALITY – GROUND

Affected Environment: Potable water is possible in this area. Water is produced from water well within 2.0 miles to the east. According to the Colorado Decision Support Systems information, the well is currently active.

Proposed Action

Environmental Consequences: With the use of proper construction practices, drilling practices, and best management practices, no significant adverse impact to groundwater aquifers and quality is anticipated to result from the proposed action. A geologic and engineering review was performed on the 8-point drilling plans to ensure that the cementing and casing programs adequately protect the down hole resources.

Mitigation Measures: Onshore Order No. 2 requires that the Operator isolate and protect all fresh to moderately saline water (TDS < 10,000 PPM) that is encountered during drilling. The Operator is required to submit a report showing the depth and analysis of all ground water encountered during drilling.

No Action Alternative
Under the No Action alternative, because no drilling or construction activities would be permitted there would be no effects.

WATER QUALITY – SURFACE

Affected Environment: Any surface runoff from the K-Diamond Federal Well #21-21 proposed well site or access road would drain into the top of Fuhr Gulch, an ephemeral tributary to the Yampa River. Water quality of the Yampa River in this area needs to support Aquatic Life Warm 1, Recreation E, Water Supply, and Agriculture. As of 2010, the Yampa River segment in this area (from Elkhead Creek to Green River) is on the Colorado Department of Public Health and Environment's (CDPHE) Section 303(d) list of Water Quality Limited Segments because of a high priority iron impairment (CDPHE 2010). This segment is also on CDPHE's Monitoring and Evaluation List for a suspected water quality problem regarding sediment load (CDPHE 2010). No surface water discharge is proposed.

Proposed Action
Environmental Consequences: Increased sedimentation towards Fuhr Gulch during spring runoff or from high intensity rainstorms is the most likely environmental consequence from the proposed action. Although some sediment may be transported off site and eventually reach perennial waters over four miles downstream, the mitigation and eventual reclamation provided in the Surface Use Plan and the Conditions of Approval would reduce the potential impacts caused by surface runoff. The proposed action is unlikely to affect the existing impaired water quality iron issue.

Mitigation Measures: None.

No Action Alternative
Under the No Action alternative, because no drilling or construction activities would be permitted there would be no effects.

Reference: Colorado Department of Public Health and Environment Water Quality Control Commission. 2010. Regulations #33, 37, and 93. http://www.cdphe.state.co.us/regulations/wqccregs/index.html

WILDLIFE, TERRESTRIAL

Affected Environment: Native plant communities in the general area are comprised of sagebrush with an understory of grasses and forbs. These plant communities provide habitat for a variety of big game, small mammals, birds and reptiles. The proposed well site is located in elk and pronghorn severe winter habitat and mule deer critical winter habitat.

Proposed Action
Environmental Consequences: Impacts to wildlife species from oil and gas development are discussed in the Colorado Oil and Gas EIS (1991). Impacts include, but are not limited to, displacement into less suitable habitat, increased stress and loss of habitat. These impacts are more significant during critical seasons, such as winter or reproduction. Big game species are often restricted to smaller areas during the winter months and may expend high amounts of energy to move through snow, locate food and maintain body temperature. Disturbances during the winter can displace big game, depleting much needed energy reserves and may lead to decreased over winter survival.
Mule deer, pronghorn and elk using winter range are likely to be disturbed by noise and human activity associated with well pad construction and drilling. These activities should not be permitted from December 1 to April 30 to prevent significant impacts to big game species.

All wildlife species using the area are likely to be displaced during construction activities. The surrounding habitat should be sufficient to support mule deer, pronghorn and other terrestrial wildlife that are displaced during construction. Most animals would return to undisturbed areas after construction is complete and human activity has decreased. The project would disturb 12.6 acres of wildlife habitat. This disturbance would be minimal on a landscape level, but would fragment habitat on a small scale. Development of the area may also lead to an increase in traffic which may result in an increase of big game/vehicle collisions.

Most small mammals, birds and reptiles using the project area would be capable of avoiding construction equipment and should not be directly harmed by these activities. Some burrowing animals may be killed by construction equipment. This should be considered a short-term negative impact that is not likely to harm populations of any species.

Mitigative Measures: CO-09 Big game winter range. No surface disturbing activities between December 1 and April 30 in order to prevent disturbance of big game using critical winter range.

To prevent long term impacts associated with noise, sound producing equipment (such as compressors or pump jacks) must be equipped with a hospital grade muffler or similar device which limits sound emissions to 60 decibels or less measured 100 feet from the source.

No Action Alternative
Under the No Action alternative, because no drilling or construction activities would be permitted there would be no effects.

CUMULATIVE IMPACTS SUMMARY: Cumulative impacts may result from the development of the K-Diamond Well #21-21 when added to non-project impacts that result from past, present, and reasonably foreseeable future actions.

Past actions near the project area that have influence on the landscape are energy development, wildfire, recreation, hunting, grazing, and ranching activities.

Present and proposed actions near the project area are primarily related to the grazing activities with the Horse Gulch Sec. 15 Grazing Allotment #04065 on the public land where the proposed access road would be sited. The surface where the well pad is proposed is privately owned and used for grazing and hunting activities.

Surface disturbance associated with oil and gas activity would increase the potential for erosion and sedimentation. Contrasts in line, form, color, and texture from development would impact the visual qualities on the landscape.

Cumulative impacts to the plant communities within the lease and adjacent areas include an incremental reduction of continuity in the plant communities in terms of acreages that remain undisturbed. Loss of continuity results in smaller and smaller areas of undisturbed native vegetation and the potential for loss of integrity within the larger plant community. Fragmented plant communities can lose resilience to natural and man-made disturbance due to isolation of areas from seed sources necessary for proper age class distribution of plants, and subsequently, a greater opportunity for stressors such as drought to have a more severe impact on the plant community as a whole. The increased disturbance also makes native plant communities more susceptible to invasion by annual weeds as vectors for increasing weeds. Even with weed control measures applied, the potential for weeds to move further into undisturbed remnant areas increases as these remnants become smaller and more isolated from larger undisturbed areas.

Cumulative impacts to the livestock grazing operations in the area may be increased through the proposed action. This area has not received the rapid rate of energy development compared to other areas of NW Colorado. The development that has occurred in this area has yet to negatively affect livestock production. If continued growth occurs, the growth in wells, roads, and human activity has the potential to reduce the availability of forage in this area far beyond direct impacts caused by construction.

Habitat fragmentation from well pad construction and the associated roads have likely decreased the nesting suitability for migratory birds in the resource area. Ingelfinger (2001) found that roads associated with oil and gas development have a negative impact on passerines bird species. Bird densities were reduced within 100m of each road. Due to the amount of new road construction and an increase in traffic on these roads, passerine populations in the area are likely decreasing.

The cumulative impacts of additional wells and roads in the project area would continue to degrade habitat for the greater sage-grouse and Columbian sharp-tailed grouse. Fragmentation, mostly due to road construction, is an important factor contributing to a decrease in habitat

quality. Disturbances such as higher traffic volume and other human activities also contribute to degradation of habitat quality. Continued oil and gas development would lead to decreased use of the habitat.

Although big game species are able to adapt to disturbances better than other wildlife, increased development would still have impacts to mule deer, elk, and antelope. Timing stipulations adequately protect big game species during critical times of the year; however, continued oil and gas development would lead to decreased use of the habitat due to increased human activity. A significant amount of vehicle traffic occurs with oil and gas development. Impacts to big game may be vehicle-animal collisions, as these are a major cause of mortality for big game species.

Future development of the Federal Oil and Gas Lease for the purpose of energy production is likely to occur. When added to the existing activities in the project area approval of this proposed action would not cause undue damage to surface or subsurface resources.

References:
Ingelfinger, F. 2001. The Effects of Natural Gas Development on Sagebrush Steppe Passerines in Sublette County, Wyoming. University of Wyoming, Laramie, WY.

STANDARDS:

SPECIAL STATUS, THREATENED AND ENDANGERED SPECIES (animal) STANDARD: The well site is located on private surface; therefore this standard does not apply. A section of the access road crosses BLM surface and this standard does apply to this portion of the project. The Proposed ROW would have minimal impacts to greater sage-grouse and their habitat. The Proposed Action would not preclude this Standard from being met.

PLANT AND ANIMAL COMMUNITY (animal) STANDARD: The well site is located on private surface and therefore this standard does not apply. A section of the access road crosses BLM surface and this standard does apply to this portion of the project. The Proposed ROW would have minimal impacts to wildlife species and their habitat. The Proposed Action would not preclude this Standard from being met.

PLANT AND ANIMAL COMMUNITY (plant) STANDARD: The Proposed Action would completely remove native vegetation within the area the road is constructed. As long as the weeds are controlled, the native plant community would remain intact beyond the disturbance area and this standard would continue to be met.

SPECIAL STATUS, THREATENED AND ENDANGERED SPECIES (plant) STANDARD: There are no federally listed threatened or endangered or BLM sensitive plant species present within or in the vicinity of the proposed well. This standard does not apply.

RIPARIAN SYSTEMS STANDARD: There are no wetlands or riparian zones present within the project area. This standard does not apply.

WATER QUALITY STANDARD: The proposed action would meet the public land health standard for water quality. Interim reclamation of the unused area on the well pad would be completed to minimize sheet and rill erosion from the well site. When the well pad is no longer needed for production operations, the disturbed well pad and access road would be reclaimed to approximate original contours, topsoil would be redistributed, and adapted plant species would be reseeded. These Best Management Practices would help to reduce accelerated erosion of the site and mitigate any additional impacts to the suspected sediment problem in the area. The proposed action is not expected to contribute to the existing iron impairment.

UPLAND SOILS STANDARD: The well site is located on private surface and therefore this standard does not apply. A section of the access road crosses BLM surface and this standard does apply to this portion of the project. The proposed action would not meet the upland soil standard for land health, but it is not expected to while the well location and access road are used for operations. The well pad site and access road would not exhibit the characteristics of a healthy soil. Several Best Management Practices have been designed into the project or are attached as mitigating measures that would reduce impacts to and conserve soil materials. Upland soil health would return to the well pad and access road disturbance after reclamation practices and well abandonments have been successfully achieved.

PERSONS/AGENCIES CONSULTED: BLM resource staff, Uintah and Ouray Tribal Council, Colorado Native American Commission, Colorado State Historic Preservation Office.

SIGNATURE OF PREPARER: /s/ Shawn Wiser

DATE SIGNED: 06/22/11

SIGNATURE OF ENVIRONMENTAL REVIEWER: /s/ Barb Sterling

DATE SIGNED: 06/22/11

Attachments: Map submitted by proponent

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
DOI-BLM-CO-N010-2011-0080-EA

Based on the analysis of potential environmental impacts contained in the EA and all other available information, I have determined that the proposal and the alternatives analyzed do not constitute a major Federal action that would adversely impact the quality of the human environment. This determination is based on the following factors:

1. Beneficial, adverse, direct, indirect, and cumulative environmental impacts have been disclosed in the EA. Analysis indicated no significant impacts on society as a whole, the affected region, the affected interests or the locality. The physical and biological effects are limited to the Little Snake Resource Area and adjacent land.

2. Public health and safety would not be adversely impacted. There are no known or anticipated concerns with project waste or hazardous materials.

3. There would be no adverse impacts to regional or local air quality, prime or unique farmlands, known paleontological resources on public land within the area, wetlands, floodplain, areas with unique characteristics, ecologically critical areas or designated Areas of Critical Environmental Concern.

4. There are no highly controversial effects on the environment.

5. There are no effects that are highly uncertain or involve unique or unknown risk. Sufficient information on risk is available based on information in the EA and other past actions of a similar nature.

6. This alternative does not set a precedent for other actions that may be implemented in the future to meet the goals and objectives of adopted Federal, State or local natural resource related plans, policies or programs.

7. No cumulative impacts related to other actions that would have a significant adverse impact were identified or are anticipated.

8. Based on previous and ongoing cultural surveys and through mitigation by avoidance, no adverse impacts to cultural resources were identified or anticipated. There are no known American Indian religious concerns or persons or groups who might be disproportionately and adversely affected as anticipated by the Environmental Justice Policy.

9. No adverse impacts to any threatened or endangered species or their habitat that was determined to be critical under the Endangered Species Act were identified. If, at a future time, there could be the potential for adverse impacts, treatments would be modified or mitigated not to have an adverse effect or new analysis would be conducted.

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
DOI-BLM-CO-N010- 2011-0080-EA

10. This alternative is in compliance with relevant Federal, State, and local laws, regulations, and requirements for the protection of the environment.

I have reviewed the direct, indirect and cumulative effects of the proposed activities documented in the K-Diamond Well #21-21 EA No. DOI-BLM-N010-2011-0080-EA. I have also reviewed the project record for this analysis and the impacts of the proposed action and alternatives as disclosed in the Alternatives and Environmental Impacts sections of the EA. Based upon a review of the EA and the supporting documents, I have determined that the project is not a major federal action and will not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. Because there would not be any significant impact, an environmental impact statement is not required.

SIGNATURE OF AUTHORIZED OFFICIAL: /s/ Matt Anderson

DATE SIGNED: 06/22/11

Decision Record

DOI-BLM-CO-N010- 2011-0080-EA

DECISION AND RATIONALE: I have determined that approving this APD is in conformance with the approved land use plan. It is my decision to implement the project with the mitigation measures provided in the Application for Permit to Drill and the Conditions of Approval. Right-of -Way Grant COC074942 will be issued to Quicksilver Resources (See Attachment 1). The project will be monitored as stated in the Compliance Plan outlined below.

MITIGATION MEASURES: The mitigation measures for this project are found in the file room of the Little Snake Field Office. The APD 12-point surface use plan, well location maps, and the Conditions of Approval are found in the well case file labeled COC64882 Well #21-21. ROW stipulations and maps for Grant COC074942 issued to Quicksilver Resources are in the serialized case files.

COMPLIANCE PLAN(S):

Compliance Schedule

Compliance will be conducted during the construction phase and drilling phase to insure that all terms and conditions specified in the lease and the approved APD are followed. In the event a producing well is established, periodic inspections as identified through the Inspection and Enforcement Strategy and independent well observations will be conducted. File inspections will include a review of all required reports and the Monthly Report of Operations will be evaluated for accuracy.

Monitoring Plan

The well location and access road will be monitored during the term of the lease for compliance with pertinent Regulations, Onshore Orders, Notices to Lessees, or subsequent COAs until final abandonment is granted; monitoring will help determine the effectiveness of mitigation and document the need for additional mitigative measures.

Assignment of Responsibility

Responsibility for implementation of the compliance schedule and monitoring plan will be assigned to the Fluid Mineral staff in the Little Snake Field Office. The primary inspector will be the Petroleum Engineering Technician, but the Petroleum Engineer, Natural Resource Specialist, Realty Specialist, and Land Law Examiner will also be involved.

Administrative Review or Appeal Opportunities

This decision is effective upon the date the decision or approval by the authorized officer. Under regulations addressed in 43 CFR Subpart 3165, any party adversely affected has the right to appeal this decision. An informal review of the technical or procedural aspects of the decision may be requested of this office before initiating a formal review request. You have the right to

request a State Director review of this decision. You must request a State Director review prior to filing an appeal to the Interior Board of Land Appeals (IBLA) (43CFR 3165.4).

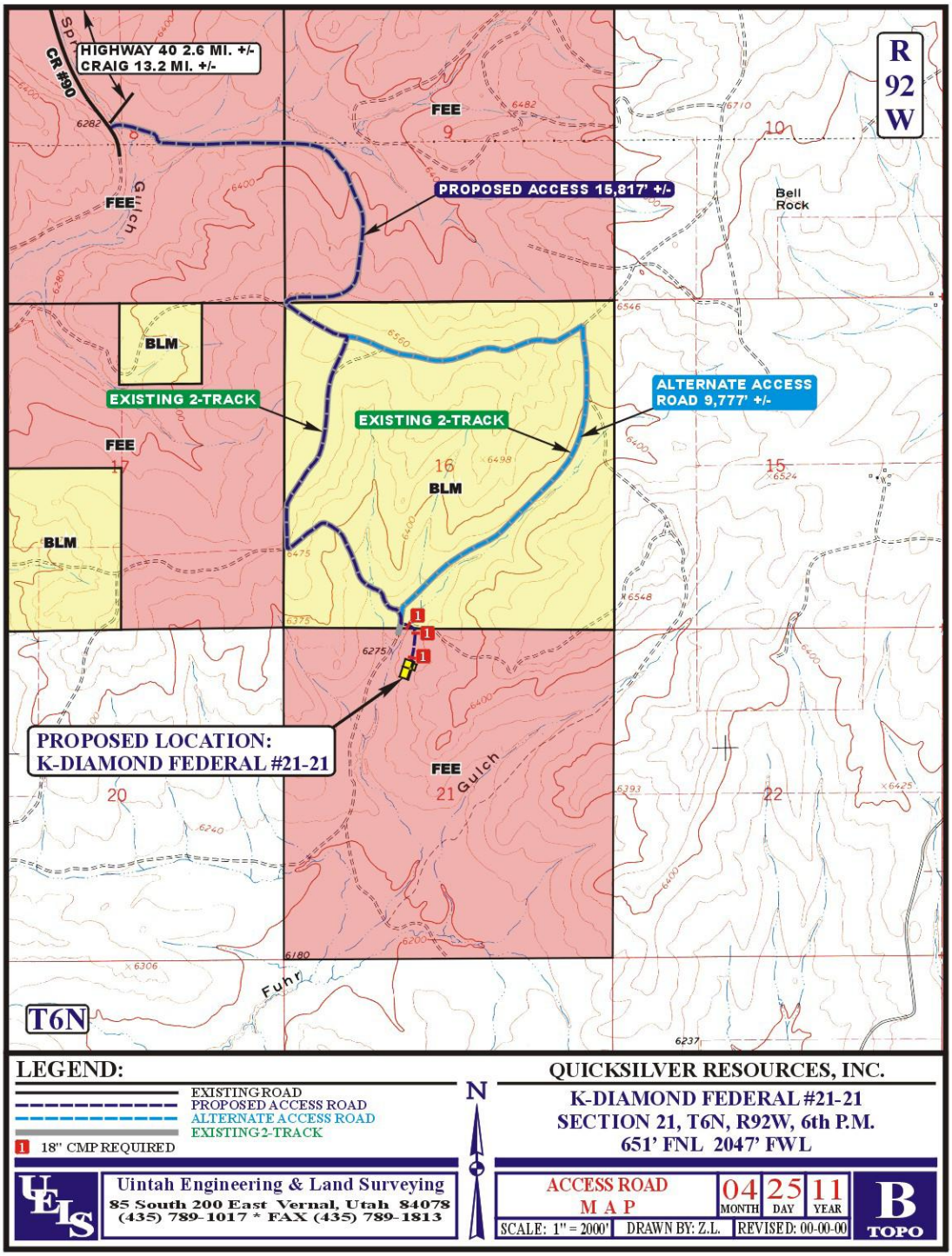
If you elect to request a State Director Review, the request must be received by the BLM Colorado State Office, 2850 Youngfield Street, Lakewood, Colorado 80215, no later than 20 business days after the date the decision was received or considered to have been received. The request must include all supporting documentation unless a request is made for an extension of the filing of supporting documentation. For good cause, such extensions may be granted. You also have the right to appeal the decision issued by the State Director to the IBLA.

Contact Person

For additional information concerning this decision, contact Shawn Wiser, Natural Resource Specialist, Little Snake Field Office, 455 Emerson Street, Craig, CO 81625, Phone (970) 826-5086.

SIGNATURE OF AUTHORIZED OFFICIAL: /s/ Matt Anderson for Field Manager

DATE SIGNED: 06/22/11



*Alternate access road was determined to be too steep at the on-site inspection. Road was not analyzed further.